



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

AUG 31 2007

MEMORANDUM

SUBJECT: Picayune Wood Treating Site, Picayune, Pearl River County, MS
Response to Comments from the National Remedy Review Board

FROM: Michael Taylor, RPM *MT*
Superfund Remedial Branch

THRU: Carol Monell, Chief *cm*
Superfund Remedial Branch

TO: Franklin E. Hill, Director
Superfund Division

A response to the comments received from the National Remedy Review Board (NRRB) for the remedy selection has been prepared and attached to this memorandum. The NRRB comments were beneficial toward moving this project closer to the Record of Decision (ROD). Some of the comments noted will be addressed in the post ROD phase during the Remedial Design.

The NRRB comments, as well as the response to these comments, will become part of the Administrative Record. A copy will be placed within the site file at the designated repository for public availability.

I will be glad to provide additional information for this site if requested. I can be reached at (404) 562-8762.

Attachment



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EPA & Black & Veatch Special Projects Corp.

Response to Comments

**National Remedy Review Board Information Package
Picayune Wood Treating Site
Picayune, Mississippi**

1. **Comment:** The Board has the following comments concerning cost estimates included in the package presented to the Board:

- The text of the package included cap components in Appendix A which were not included in cost tables (e.g., the geosynthetic drainage layer and the HDPE liner) and could impact the total cost of the preferred alternative. The Board recommends that the cost estimate be revised to add the missing items.
- Dust control and air monitoring were included in the cost estimate presented to the Board but the information was not detailed enough for the Board to evaluate the appropriateness of the estimate. The Board recommends that additional detail be provided in the decision documents.
- Numerous unit costs (e.g., excavation, geosynthetic clay liner) appear to differ significantly from unit costs for sites elsewhere in the Region. The Board recommends that unit costs be reevaluated to ensure that they are accurate.

Response: Regarding costs for cap components, these elements are listed as separate line items in the cost estimates. The cap elements account for approximately \$3 million of the \$12 million total for capital costs. Regarding the costs for dust control and air monitoring, these costs were based on the costs for water trucks to control dust and costs for setting up and managing air monitoring stations. The unit costs were based on costs for these services incurred on projects of similar scope to what is envisioned at the Picayune Wood Treating Site. Regarding the differences in unit costs between the Picayune project and other sites in the Region, the unit costs were selected from within the range of costs typically charged for these services. The differences reflect a qualitative judgment that the unit costs would reflect economies of scale. That is, the unit costs for the barrier walls, excavation, backfill, etc. would decline as the scope of these services increased. Specific cost breakdown for the soil component and O&M costs are contained in Appendix B, Tables 11 and 12 of the Record of Decision (ROD).

2. **Comment:** It is not clear whether soil sampling proceeded to "Below Site Cleanup Goals" in all directions. Data presented in Figure 4-1 suggests that sampling should be extended west and south of grid block SS-58, south and east of SS-89, and north of blocks SS-34 and S-35. All of these grid blocks exceed the commercial/industrial cleanup goals, but appear to be on the outside edge of the sampling grid. The Region indicated that additional sampling would be included in the remedial design phase. The Board encourages the Region to sample appropriate areas beyond the gridded blocks as part of that additional characterization.

Response: We acknowledge that there are uncertainties regarding the extent of contamination. However, as the comment notes, these uncertainties can be resolved

during the remedial design. The Region does not believe this additional data will result in a significant change to the scope or cost of the remedy.

3. **Comment:** The package presented to the Board did not discuss the State classification of the Citronelle Aquifer and its relevance to remedial action objectives (RAOs) for ground water at the site. The Board recommends that the Region coordinate with the State to determine the appropriate ground water use classification and that the Region then develop corresponding RAOs. The package currently presents RAOs as restoring use as drinking water. If this changes, the Board recommends that the Region reevaluate additional, potentially less aggressive, ground water alternatives, such as monitored natural attenuation, for the dissolved plume.

Response: The state of Mississippi does not have a groundwater classification "system." It considers all groundwater in the state as "Waters of the State." This aquifer, though not highly productive, can serve as a potable source. This is supported by early records that refer to the existence of private potable wells in the vicinity that tap this aquifer. In our view, there is no justification for considering the Citronelle aquifer anything but a potential source of potable water and therefore apply drinking water standards to its restoration.

4. **Comment:** The package was unclear about which specific ARARs the remedy has to meet for soil and ground water. The Region should describe in the decision documents what the ARARs are for the site and how they will be met or waived.

Response: The ROD has identified the federal and state ARARs applicable toward the remedy of this site. Sections 13.0 through 13.5 of the ROD contains specific information pertaining to the ARARs for the soil and groundwater. Another reference to the ARAR information in the ROD is contained in Appendix B with Tables 15, 16, and 17 that outline location specific, chemical specific and action specific requirements.

5. **Comment:** The preferred alternative (GW3) discussed the possibility of using one or two in-situ treatment technologies (ISCO and enhanced bioremediation) and/or an ex-situ technology (ground water flushing). However, the package did not include criteria that would be used to select the final remedy or how the costs and remedial time-frames associated with each remedy or combinations of technologies may differ. Due to the expected differences between in-situ and ex-situ technologies, the Board recommends that they be evaluated separately, including separate cost estimates and remedial time-frames.

Response: The preferred alternative (GW3) includes costs for both ISCO and enhanced bioremediation and in situ flushing to mobilize the contaminants. As proposed, all three technologies would be employed; no decision is called for in the design. There will be no ex situ treatment of the surfactant as envisioned in GW2. Its purpose is only to enhance the mobility of contaminants and thereby enhance the action of the ISCO and bioremediation technologies. In GW2, in situ flushing and ex situ treatment of the surfactant prior to reinjection is fundamental to the pump and treat system that aims at a much greater mass of contaminants than GW3.

6. **Comment:** The Board was unable to evaluate the expected effectiveness of the proposed ground water remedy. No operation and maintenance (O&M) costs were included for the preferred ground water alternative, suggesting that ground water remediation is expected

to occur very quickly. However, it is not clear if any of the identified technologies can meet the cleanup levels in a short time period given the existing contaminant concentrations. The Board recommends that a more thorough and realistic evaluation of ground water alternatives, including the timeframe to achieve cleanup goals and points of compliance to be monitored, be undertaken prior to selecting a ground water remedy for the site, and the results of this evaluation be included in decision documents for the site. This evaluation should include consideration of the location and effectiveness of the barrier walls, because it appears that the preferred alternative would leave DNAPL, outside the barrier walls. See comment 9 below.

Response: The comment regarding O&M refers to the treatment component of the remedy which is expected to occur quickly. Table 14 in Appendix B of the ROD outlines estimated costs for the groundwater component. Sufficient evidence exists to conclude that the active treatments proposed will be successful in achieving the cleanup goals in a relatively short timeframe. Similarly, evidence exists to conclude that barrier walls of the type proposed in the preferred alternative are an effective means to contain wastes of the type that are found at the Picayune Wood Treating site. One example of this alternative can be found at the Brunswick Wood Preserving site. Understanding the extent of DNAPL contamination will be a key objective for filling in the gaps during the remedial design.

7. **Comment:** The preferred remedial alternative for ground water contamination relies on a vertical engineered barrier to contain contaminant sources. Installation of the barrier, particularly keying the base of the barrier into the low permeability Graham Ferry Formation, is essential to the success of the remedy. However, this may be a difficult task. The package indicates that the upper surface Graham Ferry Formation is present at a depth of approximately 75 ft below ground surface, which would be approximately 50-55 ft below the water table. The ability to key a barrier wall into an underlying low permeability unit becomes more challenging as the depth to that unit increases and even more difficult if the saturated thickness is large. Both factors (depth and saturated thickness) increase the degree of difficulty in this situation. Given plans for in-situ flushing as part of the combined remedy (which implies injection and extraction wells, potentially in the vicinity of the barrier walls) and the already interesting subsurface hydraulics (the presence of an artesian well inside one of the containment zones), extreme care must be taken to make sure a continuous, impermeable seal occurs when the barrier is keyed into the Graham Ferry. The Region should acknowledge this issue in decision documents and address it in future design/decision documents.

Response: We recognize that the preferred remedy will present challenges. These challenges will be overcome by proper design and quality control during construction. This remedy has become a common approach toward sites with groundwater contamination that is encountered at this facility. The construction of a vertical barrier wall has been utilized successfully on several sites. For example, a Superfund site in Region 3, Standard Chlorine of Delaware, aka Metachem, Site, recently completed a vertical barrier wall construction in May 2007. The depth of the barrier wall ranged from 45 to 75 feet in depth and extended to a distance of 5,290 feet. It is noteworthy that the Graham Ferry Formation appears to be an ideal low-permeable material into which the barrier walls can be keyed. According to the groundwater quality assessment conducted

by the site owner in 1987, this unit consists of high plasticity clay with a measured permeability of 2.12×10^{-9} cm/sec. According to the same report, the unit was probed a distance of 20 feet with no change in the lithology. Further, the report notes that well logs for deep wells completed in the site vicinity indicate that the unit ranges in thickness from 100 to 300 feet. The assumption that Graham Ferry Formation is a suitable confining unit, along with all of the other assumptions that went into the costing (e.g., that a suitable barrier wall mix can be formulated), will be thoroughly tested during the remedial design.

Note also that no extraction wells are envisioned for the treatment component of the groundwater remedy. The surfactant will be injected to help mobilize the contamination. It will not be extracted and reinjected as outlined in GW2.

8. **Comment:** The Board notes that the package presented to the Board identified a range of barrier wall techniques that could be used at the site (e.g., slurry wall, sheet pile wall), but deferred the selection of the appropriate technique to the remedial design. The Board recommends that Region include in the decision documents a discussion of how the selection of barrier technology will be made (e.g., what criteria will be used) and the range of costs involved.

Response: The Remedial Design will include details of the barrier wall and specifically the discussion of the barrier technology. At this time, the preferred alternative is a soil-bentonite or cement-bentonite wall. A suitable barrier wall mix will be identified in the design phase. The ideal mix will achieve the necessary permeability and strength specifications and be compatible with the wastes that it will contain. This alternative is the most economical of the barrier wall options. In the event of an inability to achieve a successful soil-bentonite or cement-bentonite mix an alternative (e.g., sheet piles) will be considered.

9. **Comment:** The package did not include estimates of contaminant mass in surface soil, the vadose zone and the shallow aquifer within and outside the proposed containment zones. The Board is concerned that if significant DNAPL mass would remain outside the proposed containment zone, the proposed dissolved phase ground water remedy may not be effective. In addition, if there is not significant contaminant mass in vadose zone areas proposed for excavation, the Board is concerned that excavating those areas may not be cost-effective. The Board recommends that, if it has not already been done as part of the Feasibility Study, the Region evaluate the distribution of contaminant mass and use that information to inform the selection of the preferred alternative. This evaluation may lead to modifying the boundaries of the containment and treatment zones to result in a more effective remedy at reduced cost, or it may support the existing proposed boundaries and costs. In either case, an expanded discussion of contaminant mass distribution would strengthen the decision documents.

For example, the remedy includes a subsurface barrier to contain the DNAPL and highly contaminated ground water in the westerly trench impoundment area and the easterly central processing area, but not the easterly wastewater treatment DNAPL area. Depending on the results of a future pilot study, in-situ treatment by chemical oxidation

may be effective in treating the contaminated ground water outside the two proposed containment walls, but is not likely to be adequate to treat the third southeast DNAPL area if significant mass is present as DNAPL. The Board recommends the Region further evaluate the likelihood of significant DNAPL presence in the third area (the Board further notes that Figure 4-2 appears to show a larger area of potential high contaminant concentration than that outlined in Figure 4-4). If significant DNAPL is likely to be present, the Board recommends that the Region consider addressing it by extending the containment wall or using another means to ensure that achieving ground water ARARs is practical, timely, and cost-effective. The Board notes that the decision to expand the barrier wall would not necessarily limit reuse options. For example, some area within a barrier wall could be covered by a building or an asphalt cap used as a parking lot.

In addition, the identification of major areas of contaminant mass may help the Region identify any principal threat wastes that may be present. If principal threat wastes are present, the decision documents should explain to what extent the proposed remedy includes treatment of them; and if treatment is not preferred, the reasons for that approach.

Response: Currently, there is insufficient data to define the extent of the DNAPL contamination. It is determined that in situ techniques would not be adequate to address such DNAPL contamination. Section 5.5.3 of the ROD discusses groundwater contamination at the site and the existence of DNAPL. The ROD further identifies the selected remedy in Section 9.2.3 *Alternative GW3*. Additional investigations will be required during the Remedial Design phase. This data gap will be an important component in understanding the DNAPL on site. If it is shown that such contamination exists outside of the presumed locations of the barrier walls, consideration will be given to altering the alignment to capture highly contaminated material. If the investigation indicates that the contamination is less than anticipated based on the data available, the areas to be excavated will be evaluated.

10. **Comment:** The Board understands that the natural gas line crossing the site must be relocated in order for the remedial action to be implemented. The Board recommends that the Region include the relocation of this line in decision documents as part of the remedy and that it continue its work with the City to ensure that it be done in a timely fashion.

Response: The location of a natural gas line does dissect the site. The gas line supplies the western side of the City of Picayune and is a major impediment to future remedial actions. EPA is working with the City to provide a solution for this obstacle. There is a significant amount of time and labor required to conduct a move for utilities. The gas line is decades old and is in need of several repairs. Some of the issues delaying the progress of this effort include property access and right of way for pipeline flow. In addition, there are issues pertaining to subcontracting and funding delays. In summary, EPA and the City will continue to work toward the same goal.

11. **Comment:** Within the package presented to the Board, no ecologically-based remedial alternatives were presented for the wetland area in the northern portion of the site. Ecological risks are assumed to be addressed in the Mill Creek drainage and residential areas as a result of the planned removal action. For the main portion of the

site, the proposed remediation to industrial standards is portrayed as meeting the goal of ecological protectiveness. However, the wetland area is not covered under either action presented but may be contaminated, leaving an apparent gap in meeting the threshold criteria for remedy protectiveness. The Board recommends that the Region discuss in the decision documents the extent of contamination within the northern wetland area. In addition, to the extent necessary, specific ecologically-based remedy goals should be presented, inclusive of the total high molecular weight and total low molecular weight polycyclic aromatic hydrocarbons (PAHs), not only human health risk driver contaminants of concern (COCs). The Board recommends that if unacceptable ecological risks from PAHs are identified in the wetland area, then monitored natural attenuation (MNA) should be among the alternatives evaluated for remediation.

Response: The ecological risk assessment summarized in the information package included an assessment of the northeastern area referred to in this comment. The assessment, which was approved by both the Region and the State, concluded at Step 3 of the ecological risk assessment process. In so doing, no ecologically-based remediation goals were established for this site. Further review of the site and surrounding areas does not identify a specific wetlands area. The northeastern area of the site is boundary to the downtown area of the City and acts as a runoff basin and essentially the beginning of Mill Creek. Mill Creek carries the drainage away from Picayune and eventually into the Pearl River, approximately four miles away.

12. **Comment:** The package indicated that institutional controls (ICs) would be necessary to protect certain components of the remedy (cap, slurry wall, wells, etc.), limit use of the remainder of the site property, and prevent ground water use. However, the package did not include information about what type of ICs are envisioned or who would implement them. The Board recommends that the decision documents clarify these details and that the Region consider restrictive covenants for site use. Also, the Region should determine whether a local ordinance preventing ground water use needs to be in place until ground water cleanup levels are met.

Response: Institutional Controls (ICs) are discussed in the ROD for remedy selections pertaining to soils and groundwater. Section 9.1.3 identifies *Alternative S2* as the remedy for addressing surface and subsurface soils. ICs are identified within this remedy on page 9-5 of the ROD. In addition, Section 9.2.3 *Alternative GW3* outlines the groundwater remedy and is inclusive of future ICs. For example, it is anticipated that deed restrictions and property zoning will be reflective of the remedy selected. Limitations on property and groundwater use will be protective of the public as well as environment.

13. **Comment:** The Board notes that no comments on any aspect of the recommended cleanup plan were provided by any of the stakeholders (i.e., State of Mississippi, City of Picayune, or residents). Nonetheless, during the Board meeting, the Region indicated that the State was advocating a lower cleanup level for dioxin in soils than that identified as part of the preferred alternative. The Board supports the Region's approach to establish cleanup goals based on the Agency's dioxin policy and to continue working with all stakeholders, particularly the State, to reach resolution on soil cleanup levels.

Response: The EPA is committed to working with all stakeholders in addressing the threats this Site poses to the public and the environment. The dioxin cleanup goal has been thoroughly reviewed and discussed within the EPA and the State of Mississippi.

14. **Comment:** The package presented to the Board (e.g., Tables 3-land 3-2) established human health risk-based remedial goals for benzo(a)pyrene (BaP) toxicity equivalence quotients (TEQ) in soils at the 10^{-6} risk level. While this approach is consistent with the point of departure in the NCP, the Board recommends that the Region also consider evaluating BaP TEQ soil remedial goals at the 10^{-5} and 10^{-4} risk levels. These additional soil remedial goals can be used to develop variations of the existing soil alternatives in order to provide an evaluation of the cost-effectiveness of the proposed remedial alternative as compared to other potentially viable alternatives.

Response: The Region believes that the 10^{-6} risk level corresponding to commercial/industrial use is suitable for this site owing primarily to the uncertainties associated with potential exposure to multiple contaminants. As noted in the information package, other contaminants exist besides those represented by BaP TEQ and dioxin. Risk levels have been evaluated and a conservative approach is an effort to account for some uncertainty that may exist.

15. **Comment:** The risk information included in the package (e.g., Table 2-1) indicates that arsenic is responsible for both cancer risk and non cancer risk at the site; however, there is no discussion of arsenic in the remediation goals. At the meeting, the Region indicated that arsenic contamination is not related to the site nor is it being addressed as part of the remedy. The decision documents should explain why arsenic does not need to be addressed as part of this remedy.

Response: Information related to arsenic is discussed in the decision documents. In the ROD arsenic is discussed specifically in Section 5. In addition, Table 5 of Appendix B contains the risk characterization in summary. It should be noted that the Picayune Wood Treating Site did not conduct arsenic treating activities as a source for the identified contaminant. Background sampling has identified arsenic as a common occurrence in the surrounding area. BaP TEQ and dioxin contamination are widespread and in effect define the extent of contamination. Arsenic occurs only sporadically and where present is collocated with BaP TEQ and dioxin. When cleanup criteria for dioxins, BaP TEQ, and PCP are met, risks from other COCs will be addressed.

16. **Comment:** The package indicated that PCP soil remedial goals are based on ground water protection cleanup values assuming a dilution attenuation factor (DAF) of 1. The Board notes that this is a very conservative assumption and that a DAF of 20 is recommended in EPA's soil screening guidance (Soil Screening Guidance: User's Guide, EPA540/R-96/018, April 1996, page 30). The Board suggests that the Region evaluate whether this assumption is reasonable (e.g. organic carbon content, water solubility, depth to ground water, ground water velocity), whether changing it would impact the cleanup volumes and costs, and whether other assumptions should be developed instead.

Response: The question of whether site-specific conditions could justify a dilution attenuation factor (DAF) greater than 1 to calculate a cleanup level for PCP was examined. Using a DAF of 1 results in a target cleanup level of 1 ug/kg for protection of groundwater. A DAF of 20, commonly used as the comment notes, corresponds to a cleanup level of 30 ug/kg PCP. The areal extent of subsurface soil contamination greater than 1 ug/kg PCP is shown on Figure 2-3 of the FS. The 8-ft excavation cutline shown

on Figure 2-3 was based on a combination of detected concentrations of PCP and detections inferred from the high (e.g., greater than 950 ug/kg) detection limits of locations where PCP was not detected but is expected to be present. If one overlays the proposed locations of the east barrier wall shown on Figure 4-1 onto Figure 2-3, it is evident that there is only a small quantity of PCP-contaminated soil outside of the barrier wall that would require excavation. At these locations outside of the barrier wall, the concentrations of PCP (either detected or inferred) is greater than 30 ug/kg. Thus, the volume of soil to be excavated shown on Figure 2-3 of the FS would not change if the cleanup level were 30 instead of 1.

In addition, a significant pre-design field investigation will precede the RD. The main purpose of this investigation will be to more precisely delineate the extent of contamination. The results of this investigation will serve to optimize the location of the barrier walls and will determine precise cutlines. If this investigation reveals that a significant savings can be realized if the PCP cleanup level were higher, EPA may choose to evaluate a higher cleanup level at that time and could issue an Explanation of Significant Differences to the ROD that would acknowledge the change.

17. **Comment:** In the package presented to the Board, it is unclear when operation and maintenance (O&M) becomes the responsibility of the State. The preferred alternative includes both containment and restoration remedies for ground water. The containment part of the remedy would be the responsibility of the State once the remedy is constructed and is determined to be operational and functional (O&F). The restoration part of the remedy may remain the responsibility of EPA for up to ten years after the remedy is determined to be O&F before being transferred to the State. The Board recommends that the decision documents clarify the O&M requirements for both the containment and restoration portions of the preferred alternative.

Response: The O&M requirements for containment and restoration will be further outlined in the Remedial Design phase. It is anticipated the groundwater remedy will address contamination outside the barrier wall within the ten years EPA will have responsibility for O&M. Therefore, no O&M requirement is expected of the State or City of Picayune if the remedy is successful. An O&F plan will be established for the capped areas in which the State and City will be responsible for one year after construction is completed.




**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
61 Forsyth Street SW
Atlanta, GA 30303**

January 17, 2008

MEMORANDUM

SUBJECT: Picayune Wood Treating Site, Picayune, Pearl River County, Mississippi
Response to the National Remedy Review Board's Comments

FROM: Michael Taylor, RPM 
Superfund Remedial Branch

TO: David E. Cooper,
OSRTI, ARD, SPB

Enclosed is a response to the National Remedy Review Board's (Board) comments involving the review of the Picayune Wood Treating Site. The Board was very helpful in providing specific concerns and feedback this facility presents. Each site has unique circumstances and a critical review was helpful in accomplishing a completed Record of Decision (ROD).

The ROD for this site was signed in September 2007. A Remedial Design (RD) work plan is currently underway. Some of the ideas and issues presented by the Board will be addressed and implemented during the RD and throughout the remedial process.

Thank you again for your assistance. If additional information is needed do not hesitate to notify me. I can be reached at the Sam Nunn Atlanta Federal Center (404) 562-8762.

Attachment

